patients (7%) died: 2 of disease progression and 2 of other causes. Mean and median time-to-progression are 12.1 and 9.8 months respectively (range 2-53).

Conclusion: Re-EBRT using stereotactic approach is a feasible option for local prostate cancer recurrence, achieving tumour control in 45% of the patients and an acceptable progression-free interval. Toxicity of re-EBRT appeared to be very low. Future studies are needed to identify those patients who would benefit the most from this treatment.

EP-1373

Hypofractionated radiotherapy and androgen deprivation in intermediate risk prostate cancer

S. Bracci[1], M.F. Osti[1], L. Agolli[1], L. Bertaccini[1], V. De Sanctis[1], M. Valeriani[1]
[1]*Azienda Ospedaliera Sant' Andrea, Department of Radiation Oncology, Rome, Italy*

Purpose or Objective: to evaluate the outcomes in intermediate risk prostate cancer treated with hypofractionated radiotherapy (HyRT)

Material and Methods: Between March 2007 and March 2015, 145 patients affected by intermediate risk (T2b–T2c prostate cancer or Gleason Score equal to 7 or pre-treatment PSA value ranging from 10 to 20 ng/mL) prostate cancer were treated with HyRT. The median age at diagnosis was 74 years (range 53-88). A pre-treatment CT scan with 2.5 mm slices was obtained. MRI was used to better delineate the Clinical Target Volume (CTV) when available. The CTV1 included the prostate plus seminal vesicles (SSVV) and the CTV2 the prostate alone. Planning Target Volumes (PTV1 and PTV2, respectively) were generated with 8 mm margin in all directions except posteriorly where a 6 mm expansion was adopted in the first 36 patients. A 5 mm expansion in all direction was used in the other patients as daily kv Cone Beam CT was used to verify the patient position because of an implementation of the linear accelerator. A 3D-CRT and a 15 MV photons linear accelerator was used to deliver the treatment. The PTV1 received 43.8 Gy in 12 fractions and the PTV2 received 54.75 Gy in 15 fractions, three times a week in order to avoid an excess of acute toxicity. Neoadjuvant, concomitant and adjuvant ADT was administered for a total of 9 months and was started 3 months before RT.

Results: After a median follow-up of 52.4 months (range 7 to 95 months), 11 patients (7.6%) died, of whom 9 for intercurrent disease and 2 (1.3%) for PCa. The 5-year OS was 90.1% (95%CI 84.2-97.6%) and the 5-year CSS was 98.6% (95%CI 95.4-100%). Fourteen patients (9.7%) developed biochemical recurrence after a median follow up of 30.5 months (95% CI 28.5 to 32.5 months). Of these patients, thirteen (9.0%) had also a clinical detectable disease while the remaining patient presented only biochemical recurrence. The 5y-bRFS was 88.8% (95%CI 82.8-95.4%). Among the 13 patients with clinical recurrence, 7 (53.8%) had local recurrence, 2 (15.4%) developed distant metastases, and 4 (30.8%) had both local recurrence and distant metastases. Acute genito-urinary (GU) toxicity of grade 1 occurred in 74 patients (51.0%), grade 2 in 15 patients (10.3%) and grade 3 in 2 patients (1.3%). Acute gastro-intestinal (GI) toxicity of grade 1 were observed in 27 patients (18.6%), grade 2 in 12 patients (8.2%). None developed acute GI toxicity of grade 3 or 4. Late GU toxicity occurred as follows: grade 1 in 51 patients (35.2%), grade 2 in 12 patients (8.2%), grade 3 in 2 patients (1.3%). Late GI toxicity of grade 1 was observed in 18 patients (12.4%), grade 2 in 6 patients (4.1%) and grade 3 in 1 patient (0.7%).

Conclusion: The hypofractionated schedule used is well tolerated with a low rate of acute and late ≥grade 2 gastrointestinal and genitourinary toxicities. Hypofractionation is useful to obtain high rate of tumor control but a longer follow-up is needed for definitive conclusion.

EP-1374

Contouring guideline optimisation for prostate pts undergoing carbon ions/photons combined treatment

T. Giandini[1], M. Carrara[2], E. Pignoli[2], N. Bedini[3], S. Morlino[3], D. Bosetti[3], B. Avuzzi[3], S. Villa[3], A. Hasegawa[1], S. Russo[4], B. Vischioni[5], M. Ciocca[4], F. Valvo[5], B. Jereczek-Fossa[1], D. Ciardo[1], D. Zerini[1], S. Colangione[1], C. Fodor[1], F. Cattani[1], R. Valdagni[3], R. Orecchia[1]
[1]*European Institute of Oncology, Radiotherapy Division, Milan, Italy*
[2]*Fondazione IRCCS Istituto Nazionale dei Tumori, Medical Physics, Milan, Italy*
[3]*Fondazione IRCCS Istituto Nazionale dei Tumori, Radiation Oncology 1, Milan, Italy*
[4]*Fondazione CNAO, Medical Physics Unit, Pavia, Italy*
[5]*Fondazione CNAO, Clinical Radiotherapy Unit, Pavia, Italy*

Purpose or Objective: In the context of the multi-institutional research project "Carbon ions boost followed by pelvic photon intensity modulated radiotherapy for high risk prostate cancer", Contouring Guidelines (CG) for target volumes and Organs At Risk (OARs) were commonly defined based on National/International standards and local experiences. Intra- and inter-institutional variability was evaluated within a contouring dummy-run and a graphical tool was developed to assist the Radiation Oncologists (ROs) in the standardization of the contouring.

Material and Methods: CT and MR images of 5 prostate patients were randomly chosen. Seven ROs belonging to the three Institutes involved in the project were assigned to independently contour targets (prostate (GTV-P), seminal vesicles (CTV-VS) and pelvic lymph nodes (CTV-N) and OARs (rectum (R), bladder (B), femoral heads (FH), small bowel (SB) , penile bulb (PB) and anal canal (AC). The registration between CT and MR images was only used to contour GTV-P and PB. The contours were compared by means of the DICE Index (defined as $2*(A \cap B)/(A+B)$, where A e B are the volumes in comparison), as provided by the commercial software VODCA (MSS, v.5.4.0). For each structure, the Global DICE Index (GDI) was calculated as the average value for all the ROs and the patients and then compared with the DICE Index of the individual ROs: an individual DICE Index lower than the corresponding GDI (or lower than a threshold value of 0.9 for GDI > 0.9) was recorded as "disagreement" and reported in a graphical tool (Figure 1) that qualitatively shows intra- and inter-institutional variability.

Results: The resulting GDI are reported in Table 1. A visual analysis of the contours on the CT images showed that the poor quality GDI for CTV-VS and AC were due both to a not strict application of the CG by the ROs of the different Institutes and to the small volume of those structures. The other results were instead attributable to random variation in the contouring. The graphical tool clearly showed that inter-institutional variability was predominant compared to intra-institutional variability both for targets and OARs. Nevertheless, some disagreement was found even between ROs of the same Institute.

Table 1 – *Mean values and standard deviations of the Global DICE Index for the contoured structures*

Structures	Global DICE Index
Prostate	$0,87 \pm 0,02$
Seminal Vesicles	$0,49 \pm 0.06$
Pelvic Lymph Nodes	$0,75 \pm 0.01$
Rectum	$0,80 \pm 0.02$
Bladder	$0,959 \pm 0.003$
Femoral Heads	$0,936 \pm 0.005$
Small Bowel	$0,78 \pm 0.10$
Penil Bulb	$0,71 \pm 0.02$
Anal Canal	$0,52 \pm 0.06$